

RUPTURE OF THE INTERVENTRICULAR SEPTUM

BY

ALAN B. BLACK

From the Queen Elizabeth Hospital, Birmingham

Rupture of the infarcted interventricular septum was first described more than a century ago in this country (Latham, 1846). The subject was last reviewed by Fowler and Failey (1948), who discovered 56 recorded cases, of which 16 were diagnosed during life. Since their review, single cases have been described by Sweeny (1948), Bickerman and Irons (1949), Shapir (1949), Ungar and Ullman (1950), and Muller *et al.* (1950) and two by Furman and Meneeley (1948). All of these were diagnosed during life. Thus, until the time of writing, 23 out of 63 cases were correctly diagnosed before death. A further example in which a diagnosis of ruptured septal infarction was made, before death, is recorded here.

The physical signs were noted in 51 of these cases. In 49 there were systolic murmurs, with associated thrills in 24. In 4 there were diastolic murmurs, in 2 there were no abnormal auscultatory signs to suggest the lesion, and in the remaining 13 the physical signs were not recorded.

Case Report

A man, aged 72, was admitted to hospital in February, 1950. He had served in the Royal Navy from twenty until he was sixty and at the time of his discharge from the service was perfectly fit. He remained well until two months before admission to hospital, when he had a severe attack of retrosternal pain extending down the left arm. The pain lasted twenty-four hours. Almost every night afterwards until his admission to hospital he experienced intense shortness of breath, so severe that he had to sit up in a chair for about an hour before being able to return to bed. These attacks occurred in spite of the use of several pillows.

On admission he was orthopnoëic and dyspnoëic at rest. The neck veins were distended and pulsating and there was slight sacral œdema. The pulse was regular and the blood pressure 120/80. The heart was not enlarged. There was a systolic thrill to the left of the lower end of the sternum, and a systolic murmur, loud in all areas but maximal at the inner end of the fourth left intercostal space. There were no abnormal signs in the lungs apart from scattered rhonchi and basal crepitations. Slight hepatic enlargement and tenderness were the only abnormal findings on abdominal examination. The venous pressure was 150 mm. of water. A radiogram of the chest showed slight left ventricular enlargement and some pulmonary congestion. A cardiogram showed sinus rhythm. The significant abnormalities were found in the unipolar præcordial leads. Whereas R in V1 was 1 mm. high, R in V2 was only 0.5 mm. high and in V3 was even less. A small Q was present in leads V4 to V6. The S-T segments were elevated in all these leads.

A diagnosis was made of anteroseptal myocardial infarction with rupture of the interventricular septum and congestive cardiac failure. After treatment for one month with rest in bed, digitalis, and mercurial diuretics he was allowed to go home. He remained well for two weeks and then began again to experience attacks of cardiac asthma. Four weeks after his discharge he was admitted to hospital again with symptoms and signs identical with those found on his first admission. The only cardiographic change was prolongation of the P-R interval to 0.24 sec. (Fig. 1). His progress

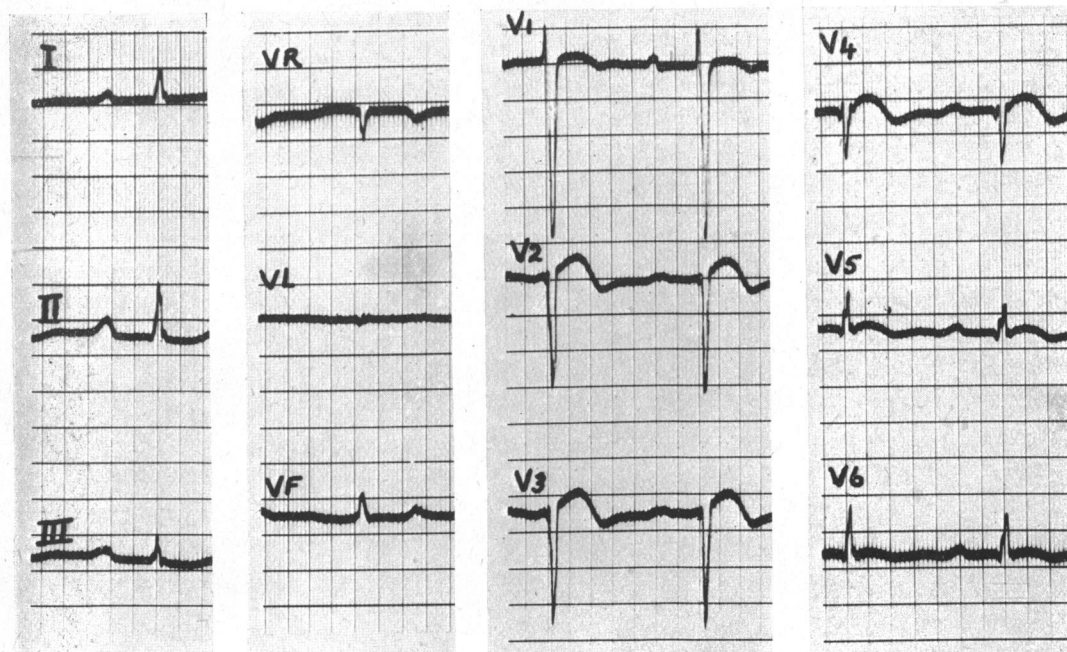


FIG. 1.—Cardiogram from the patient, obtained during second period in hospital.

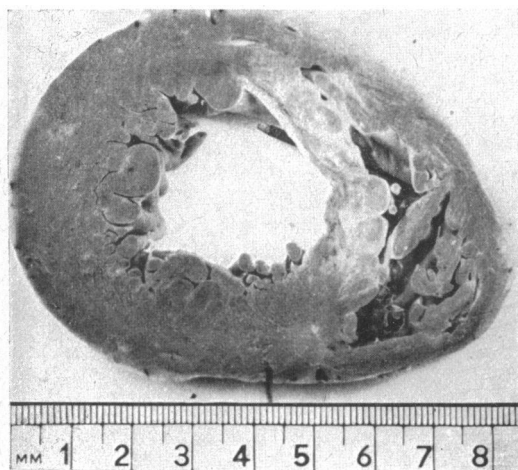


FIG. 2.—Upper surface of a 1-cm. slice, 5 cm. from apex, showing extent of pale, infarcted portion of interventricular septum.

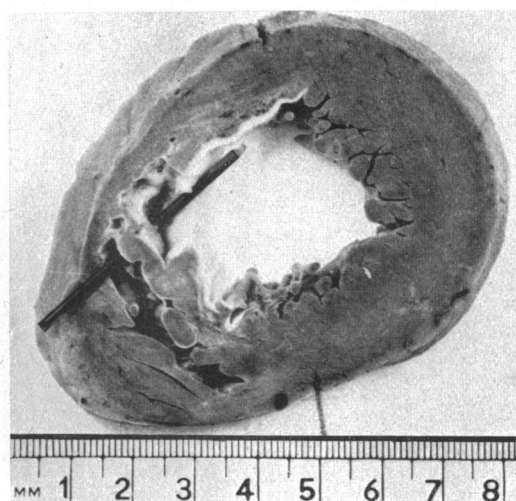


FIG. 3.—Lower surface of a 1-cm. slice, 5 cm. from apex, showing perforation through the infarcted interventricular septum.

was punctuated by an attack of gall stone colic with obstructive jaundice, but his general course was downhill and he died in August, 1950.

At necropsy external examination showed gross œdema of the legs. There was about 250 ml. of dark amber fluid in each pleural cavity, and the lungs, which were emphysematous, showed severe congestion and œdema. The visceral and parietal layers of the pericardium were adherent over the anterior surface of the apex of the left ventricle. There was an aneurysmal bulge, 3 cm. diameter, of the underlying wall of the left ventricle. The heart was cut into slices, 1 cm. thick, at right angles to its long axis, from the apex to the base. The endocardium lining the aneurysmal area was greatly thickened. In the fifth slice was a funnel-like communication between the ventricles lined by greatly thickened endocardium (Fig. 2 and 3). All the other viscera showed severe congestive changes. The gall bladder showed chronic inflammatory changes and contained multiple faceted calculi.

Conclusion

A clinical diagnosis of ruptured infarction of the interventricular septum would appear easy. It should be considered in any patient with a history of myocardial infarction who develops a loud and rough systolic murmur with thrill to the left of the lower part of the sternum, and confirmed by a cardiographic pattern characteristic of septal infarction.

I wish to thank Dr. O. Brenner for permission to record this case. I am indebted to Mr. T. F. Dee for the reproduction of the electrocardiogram and for the print of the photograph.

REFERENCES

- Bickerman, L. J., and Irons, E. E. (1949). *Ann. intern. Med.*, **31**, 918.
 Fowler, N. O., and Failey, R. B. (1948). *Amer. J. med. Sci.*, **215**, 534.
 Furman, R. H., and Meneely, G. R. (1948). *Amer. J. Med.*, **5**, 313.
 Latham, P. M. (1846). *Lectures on Subjects Connected with Clinical Medicine Comprising Diseases of the Heart*. Vol. II., p. 171. London: Longmans, Brown, Green and Longman.
 Muller, O., Hummerfelt, S., Rasmussen, H., and Storstein, O. (1950). *Acta Cardiol.*, **5**, 633.
 Shapir, M. M. (1949). *Klinicheskaya Meditsina*, **3**, 85.
 Sweeney, P. J. (1948). *Clin. J.*, **127**, 175.
 Ungar, H., and Ullman, T. D. (1950). *Cardiologia*, **16**, 67.